553,682

(54) Title: CORRECTION OF TROPOSHERE INDUCED ERRORS IN GLOBAL POSITIONING SYSTEMS
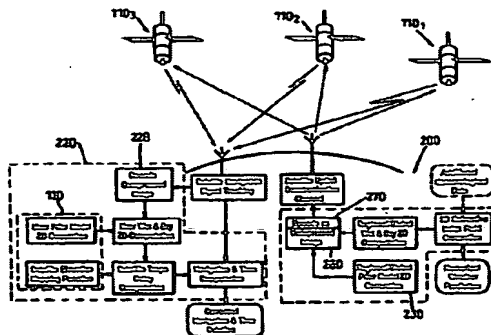
(57) Abstract: A method of obtaining data for use by a receiver of a satellite positioning system or a GNSS comprises deriving the
data remotely from the receiver by a server (200), using meteorological information and a regional or global three dimensional map
of grid points from which it computes tropospherical delays by ray tracing through the refractivity field derived from atmospheric
measurements of pressure, temperature and water data content, such measurements being available from meteorological bodies.
When used to enhance position determined by a user receiver that includes a non-meteorological, climate based model (130) giving
zenith delays and means (130') to map them to particular inclinations, the server also includes a copy of such non-meteorological
model (230) and provides its ray traced delay values as zenith delays. The sets of zenith delay values for corresponding grid points
are compared in the server (260) and modifications developed (preferably in fractional form) by which the non-meteorological delay
values require correcting to be accurate. The correction sets are reduced by image compression techniques (270) and transmitted via
the satellites (110₁ etc) of the GNSS at low data rate to the user receiver, which receiver simply applies the corrections to the Zenith
delays derived by its own model. If a user position is known, the server may derive accurate tropospheric delay values directly for
the receiver position directly for transmission.